

1/26/2011 Working Draft until January 31, 2011

City Council Presentation Proposed Water Reservoirs

January 31, 2011

*Department of Public Services
Engineering Services Division*



“If we want things to stay as they are, things will have to change”

Giuseppe Tomasi di Lampedusa
11th Prince of Lampedusa

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Background

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- 1991, ISO, a provider of underwriting, rating and statistical information to the insurance industry, completes a Public Protection Classification study for Rochester Hills. The study identifies five (5) areas within the City that were deficient in the desired hydrant fire flow volumes and pressures.
- The City experienced drought conditions in 2000 which increased the system demand resulting in numerous low pressure complaints from customers located in the NW sections of the City.
- The 2002 BIOTERRORISM ACT mandates a review of utility operations and the establishment of emergency procedures for public water systems.
- 2002, ARCADIS Engineering completes a water system analysis. The purpose of the analysis is to identify flow deficiencies and methods to level out peak demands. The recommendation includes the construction of two (2) water storage reservoirs.



Background, cont.

- A multiple day power failure in August of 2003 drains the City's water system, questioning emergency situation capabilities and fire fighting capacities.
- 2003, ARCADIS completes a second, more detailed water system analysis to confirm storage facility locations and the expected pay-back period. The report indicates a pay back period of approximately 8 years.
- 2003, DWSD establishes A Technical Advisory Committee (TAC) for the development of a Model Contract governing the water purchase rate methodology for customers. The committee is made up of representatives from DWSD and suburban municipalities. This cooperative arrangement leads to the adoption of a system wide standardized purchase methodology that includes: distance, elevation, max day and peak hour purchase rates.

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Background, cont.

- 2008, DWSD recommends that municipalities consider water storage as an option for reducing water purchase rates.

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- 2008, The City of Rochester Hills establishes voluntary watering restrictions limiting automatic irrigation system operation from 12:00 am to 5:00 am.
- In May of 2009 The City of Rochester Hills, following 8 months of negotiations, adopts a 30-year contract with DWSD. The contract includes provisions for water storage.
- In December of 2009, Tetra Tech completes a feasibility study intended to review the concept of buying water during off-peak periods, at reduced rates, and then releasing the water into the City's system during peak periods, reducing the cost of purchased water from DWSD. The report indicates the potential for reducing DWSD water purchase rates by 38%.

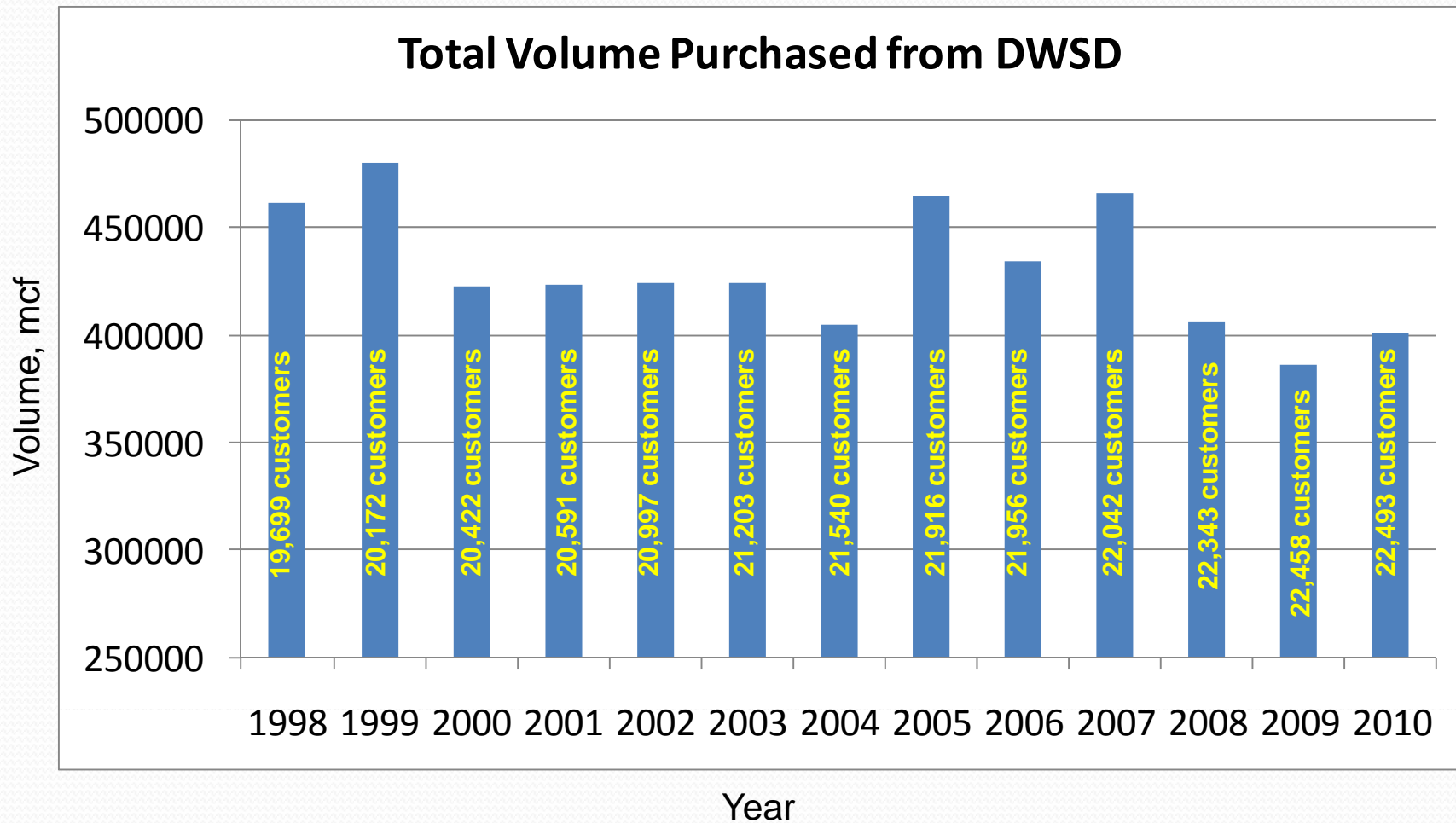


Background, cont.

- January 2010. A presentation to City Council on the feasibility of constructing water storage facilities includes 5 employees from DWSD. The DWSD Director confirms that communities with water storage have lower water purchase rates. **1/26/2011 Working Draft until January 31, 2011**
- January 2010. The Water and Sewer Rate Technical Review Committee recommend that City Council move forward with the design of water storage facilities.
- Over the past 20 years a need for an improvement to our water system has been identified that will have a positive impact on cost, public safety, improved pressures and customer service.

Water Use, 1998-2010

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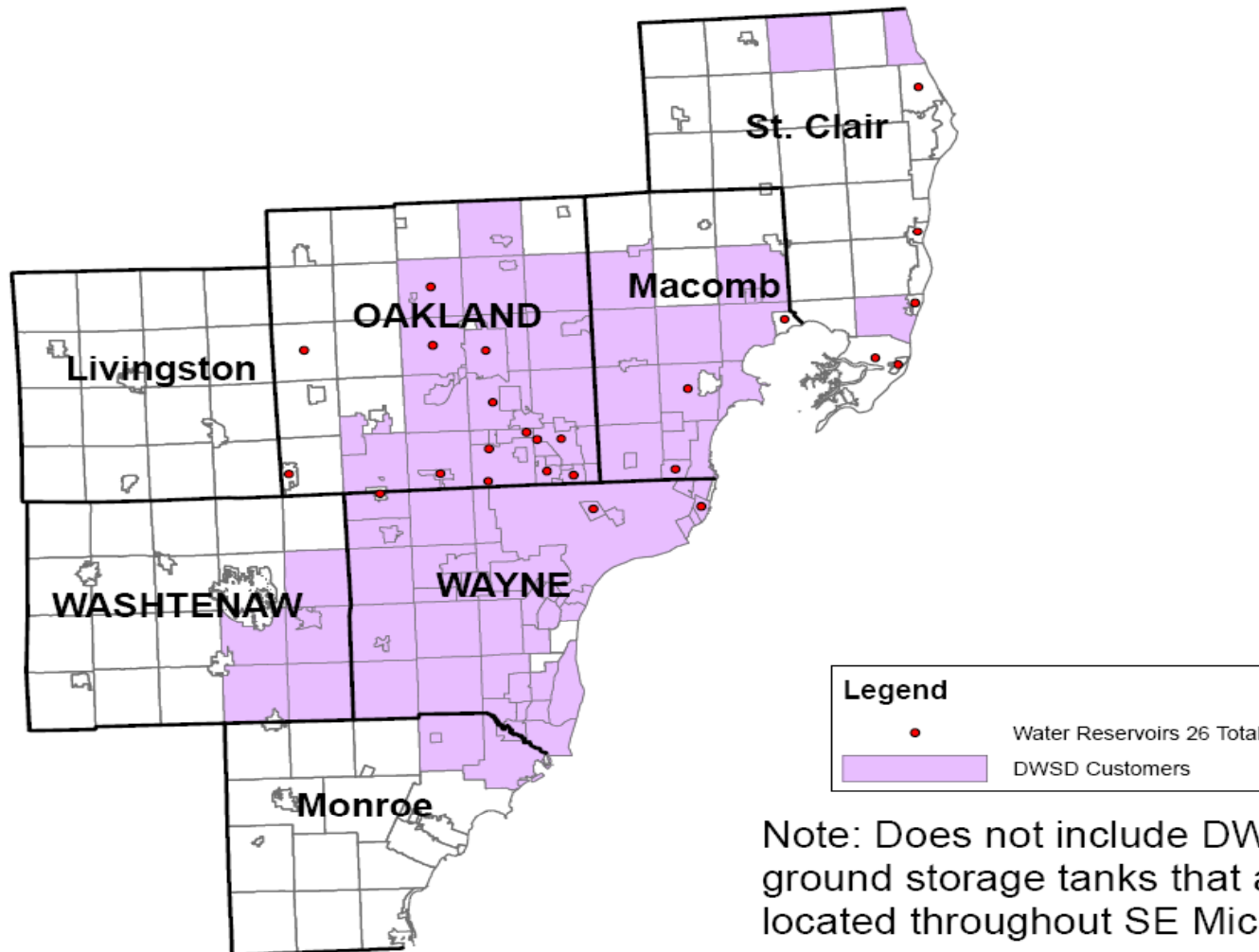
DWSD Customers

- DWSD has 85 customers connected to its water system
- Of the 85 customers, 20 customers have some form of water storage
- Two of the customers with storage are water authorities and consist of 22 communities (not included in the 85 customers)
- Of the 85 customers, 7 customers are max day customers, this includes two of the water authorities. Five of these 7 customers have some form of water storage.

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DWSD Customers

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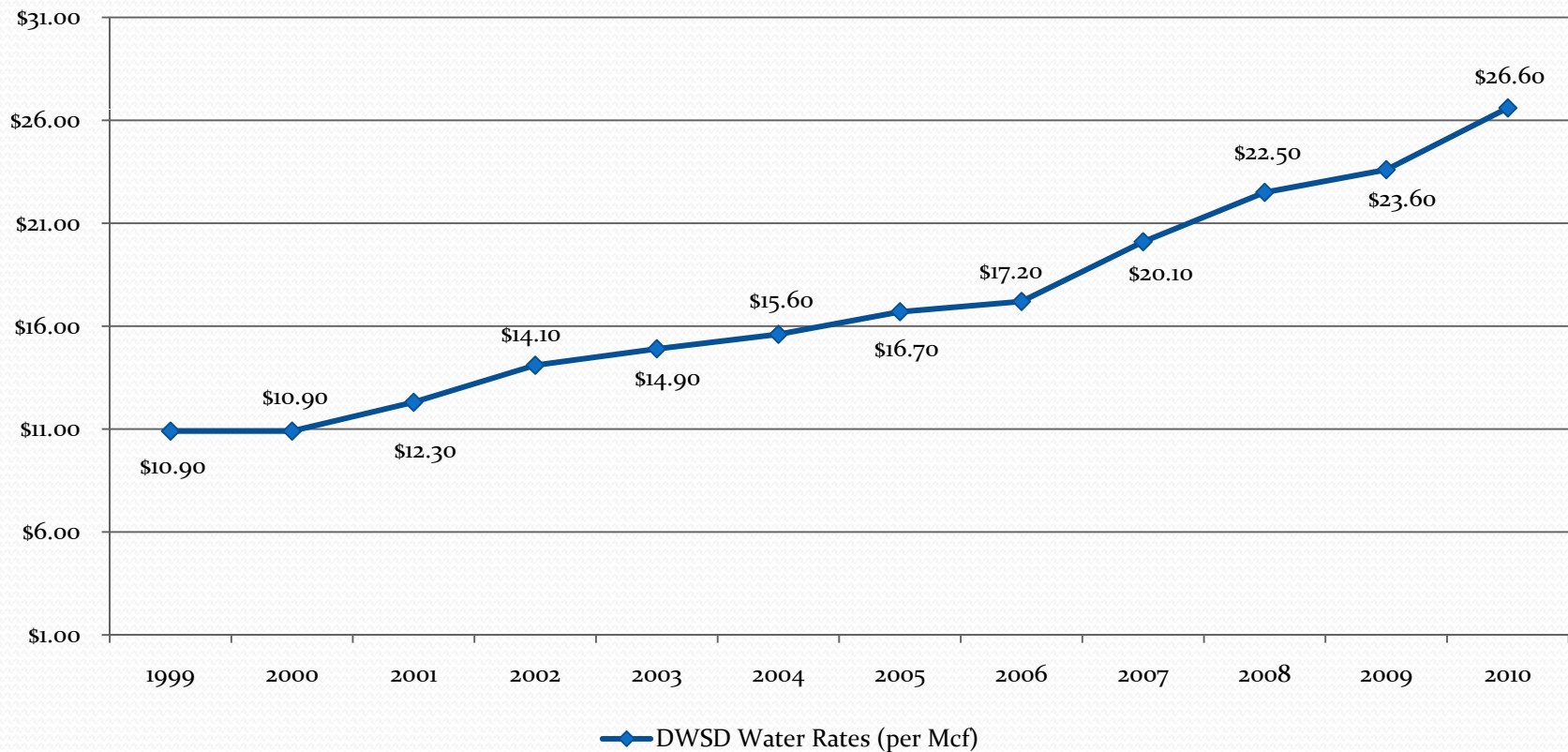
Note: Does not include DWSD's ground storage tanks that are located throughout SE Michigan

DWSD Water Rate Increase

Rates include fixed costs

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DWSD Water Rates (per Mcf)





DWSD Current Rate Structure

The following information is used to develop the City's water rate:

- Base: average day usage
- Maximum Day: avg. amount of water used above the average day usage
- Peak Hour: water used above the maximum day usage
- Distance: distance in miles from the customer's connection to the DWSD system
- Distance-Elevation: elevation difference between customer and average of five treatment plants

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DWSD Water Rate Calculation Sheet for Rochester Hills

FY 2010-11 PRELIMINARY RATE CALCULATION							
COMMUNITY: Rochester Hills							
	A	B	C	D	E	F	G
<u>Service Category</u>	<u>Cet Dmd</u> <u>Proxies</u> <i>mgd</i>	<u>Units of</u> <u>Service</u> <i>Mcf/day</i>	<u>Applied</u> <u>Units</u> <i>Mcf/day --</i>	<u>Unit Cost</u>	<u>Allocated</u> <u>Costs</u>	<u>Cost Recovery</u>	
						<u>Fixed (c)</u>	<u>Commodity</u>
1 Commodity	(a)	1,219.2	1,346.0	\$188.01	\$253,057	\$0	\$253,057
2 Max Day Usage	25.81	3,450.3	3,577.1	803.54	2,874,353	487,788	2,386,565
3 Peak Hour Usage	51.91	6,939.4	7,066.2	0.00	0	0	0
4 Peak Hour Increment			3,489.1	225.77	787,722	0	787,722
5 Commodity Distance	26.9 miles		36,207.4	0.00	0	0	0
6 Max Day Distance			96,223.9	0.00	0	0	0
7 Peak Hour Use Distance			190,079.6	8.89	1,689,427	385,719	1,303,708
8 Peak Hour Incr Distance			93,855.8	0.00	0	0	0
9 Commodity Distance-El	48.7 miles (b)		65,550.2	10.71	701,846	0	701,846
10 Max Day Distance-Elevation			174,204.5	1.30	226,466	0	226,466
11 Peak Hour Use Distance-Elevation			344,121.9	11.05	3,800,826	0	3,800,826
12 Peak Hour Incr Distance-Elevation			169,917.3	7.34	1,247,533	0	1,247,533
13 Customer B (Meters)		2,385 eq 5/8" mtrs		19.14	45,637	45,637	0
14 Wholesale Customer Support			1,346.0	58.15	78,275	78,275	0
15 Total FY 2011 Revenue Requirement					\$11,705,142	\$997,419	\$10,707,723
16 FY 2011 Billing Units					445,000	12	445,000
17 FY 2011 Rate Schedule (16)/(17)		Fixed Monthly Charge & Commodity Rate - \$/Mcf			\$26.30	\$83,118	\$24.06

Community Max Day /Peak Hour

Community	Max Day Usage	Peak Hour Usage	Peak Hour Increment
Auburn Hills	12.50	13.54	1.04
Bloomfield Township	19.00	35.00	16.00
Brownstown Township	7.62	13.00	5.38
Clinton Township (storage)	25.80	29.00	3.20
Commerce Township	7.62	13.73	6.11
Farmington Hills	25.92	46.72	20.80
Flint (storage)	50.47	52.76	2.29
Gross Pointe Woods (storage)	5.36	5.36	0.00
Livonia	31.55	45.37	13.82
Novi	18.57	34.53	15.96
Oak Park (storage)	4.91	4.91	0.00
Orion Township	8.50	12.00	3.50
Rochester Hills	25.81	51.91	26.10
Sterling Heights	40.50	61.00	20.50
St. Clair Shores	9.10	13.20	4.10
Troy	28.00	38.00	10.00

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Note: Info is based on 2010-2011 Rates



What Have We Done?

- The City's peak hour was reduced from 51.91 to 37.40 due to a shift in peak hour. Years 2006-2008 were at 7:00 am. Years 2009-2010 were at 4:00 am, thus shifting into DWSD non-peak hours.
- Rochester Hills passed the irrigation ordinance in August 2008.
- May 2010 water conservation program was launched by the City to inform customers of ways to conserve water and possibly reduce rates.

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What Else Can Be Done to Reduce Rates?

- Odd/even watering.
- Area maintenance meters.

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Proposed Water Reservoirs, Why Now?

- The City recently approved Amendment #1 to the DWSD Water Service Contract during the first re-opener of the new 30 year contract. 2011-2013
- If there is a significant change in the customers water distribution system, the contract can be reopened to renegotiate volumes and demands.
- The City of Rochester Hills will have another contract re-opener in three (3) years (2013). The contract re-openers will be every five (5) years after that.
- It is unlikely that DWSD would change their rate structure during a contract period. Thus a max day customer would stay at a lower rate with typical annual increases.

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Estimated Water Rates (2010)

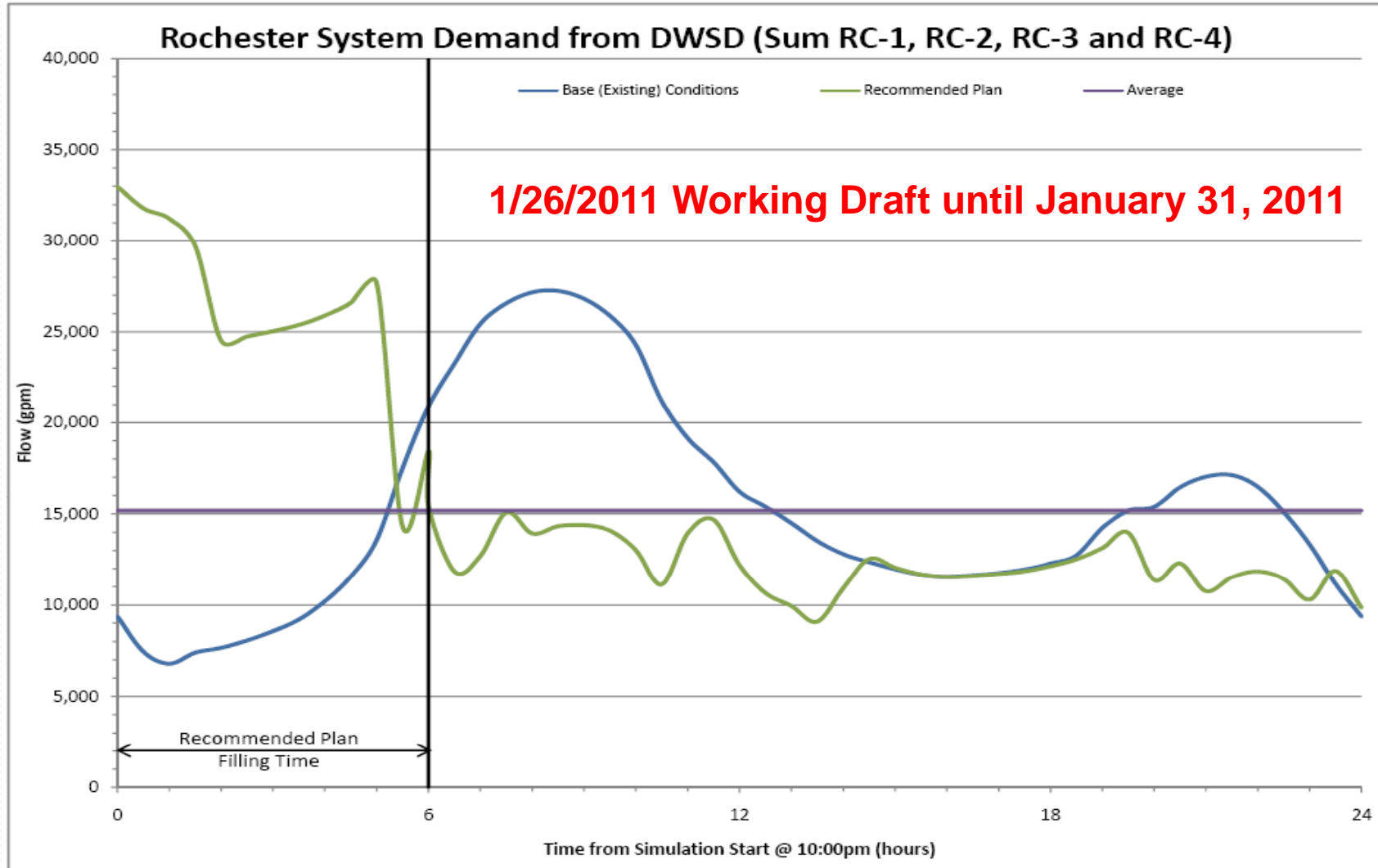
Volume	Max Day	Peak Hour	Monthly	\$/Mcf
445,000	25.81	51.91	\$ 83,618	\$ 24.34
430,000	23.80	37.40	71,682	19.26
430,000	23.80	23.80	63,396	13.56
420,000	23.80	37.40	71,497	19.66
420,000	23.80	23.80	63,211	13.82
410,000	23.80	37.40	71,310	20.08
410,000	23.80	23.80	63,024	14.10

Rochester Hills Peak Hour

Year	DWSD		Rochester Hills	
	Max Day	Peak Hour	Peak Hour	Peak Hr (MGD)
2002	July 16	4:00 PM	6:00 AM	35.80
2003	July 31	8:00 PM	6:00 AM	37.20
2004	July 2	8:00 AM	6:00 AM	33.29
2005	June 27	7:00 PM	6:00 AM	36.87
2006	June 17	7:00 AM	7:00 AM	40.20
2007	August 3	6:00 AM	7:00 AM	44.99
2008	August 18	5:00 AM	7:00 AM	30.92
2009	August 5	6:00 AM	4:00 AM	26.95
2010	July 7	7:00 PM	4:00 AM	30.06

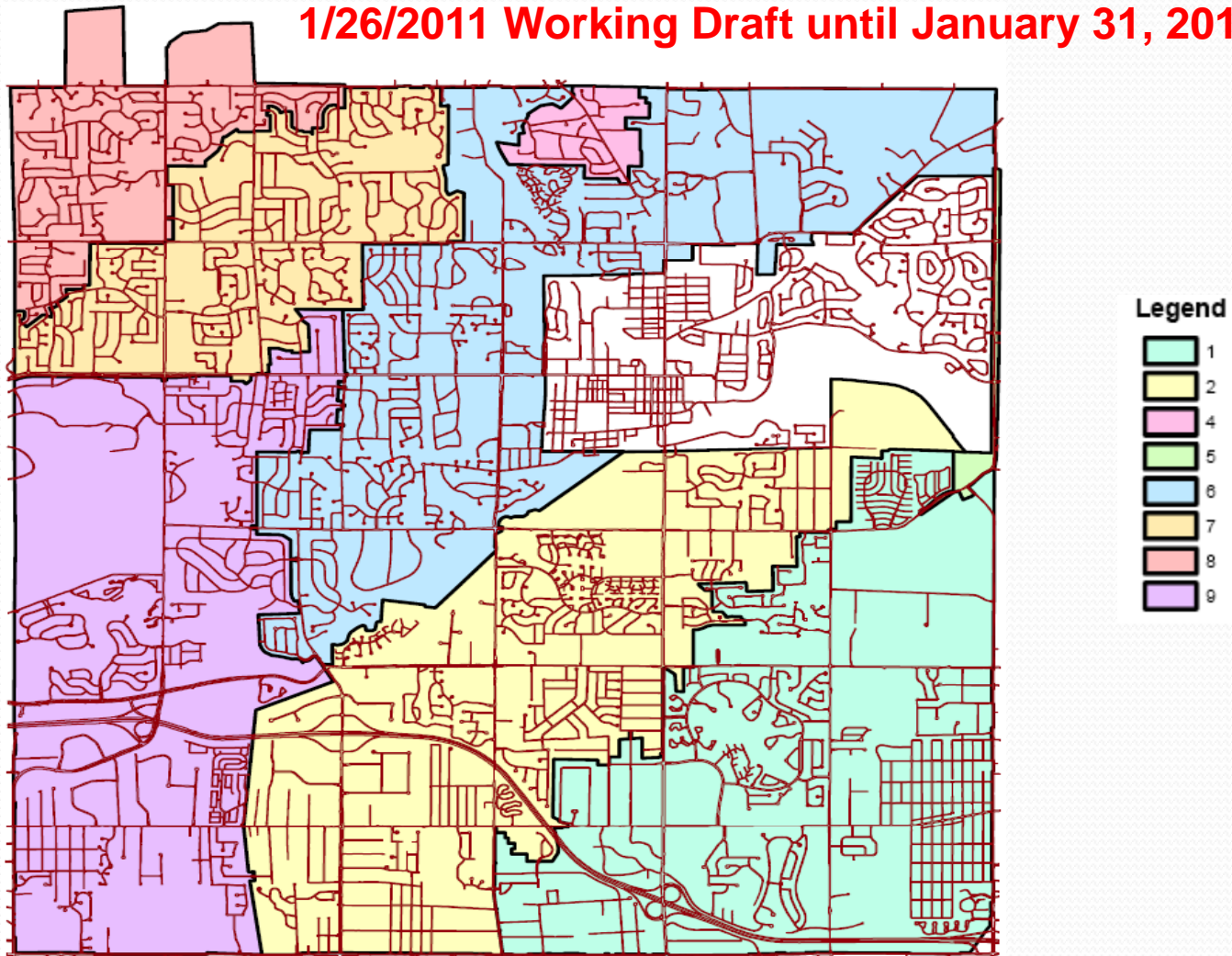
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Peak Flow Reduction

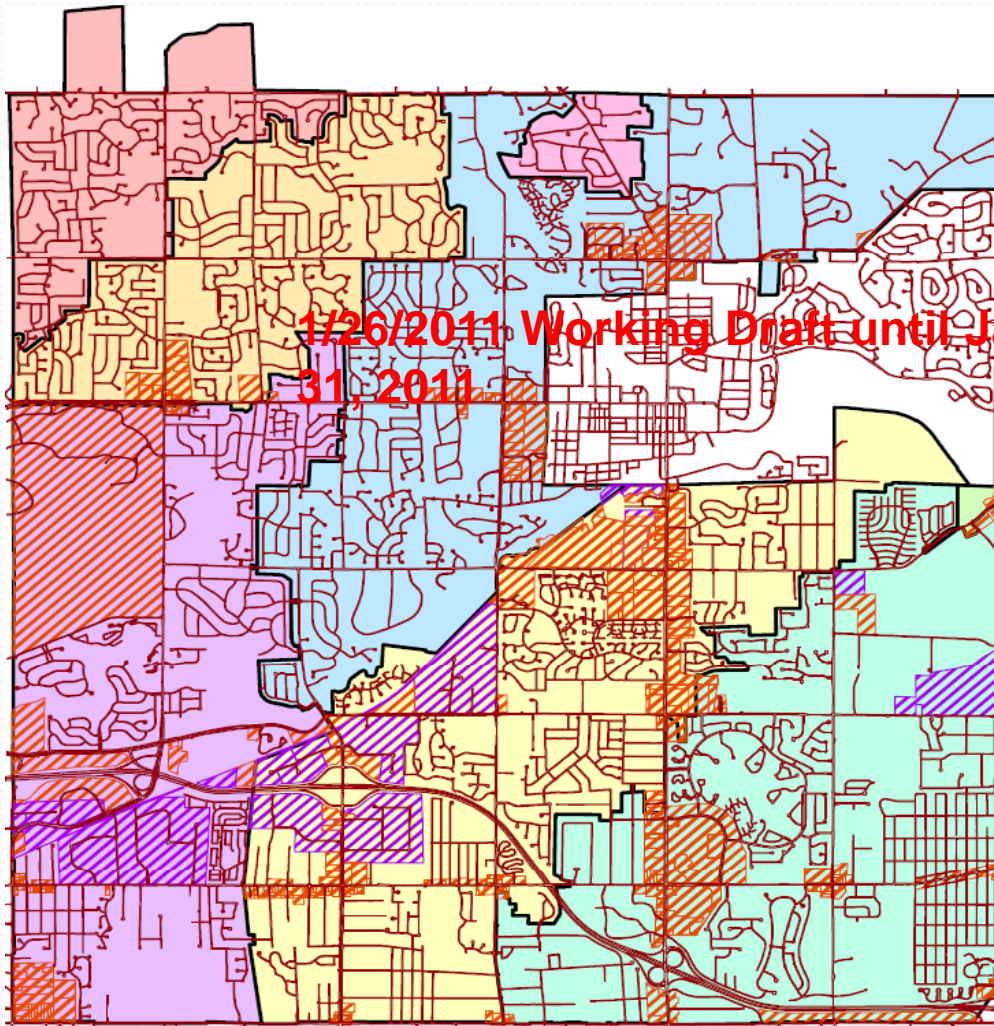


City of Rochester Hills, Pressure District Map

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City of Rochester Hills, Pressure District Map w/ Industrial Property



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Legend

-  Commercial/Office/PUD
-  Industrial



Proposed Industrial Location

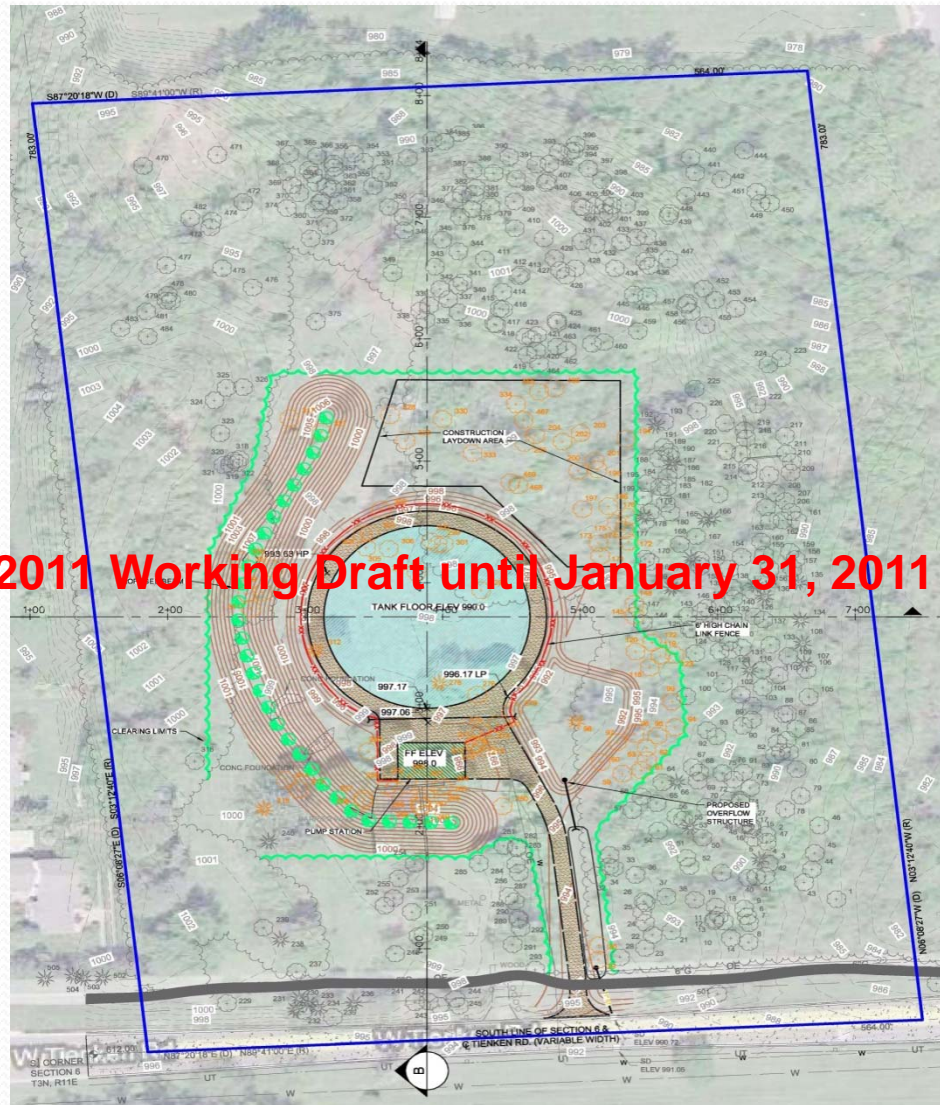
The City looked at the possibility of locating the proposed NW water reservoir in an industrial/commercial location (Crooks/Avon Industrial area). The results from the modeling are as follows:

- City does not own property in this location and not sure what properties are available or costs of properties
- Max Day requirements can be met at a Crooks/Avon Industrial location
- The cost associated with constructing a reservoir in this area would be approximately \$4,000,000 more than the Tienken / Adams location. This does not include property purchase or re-engineering

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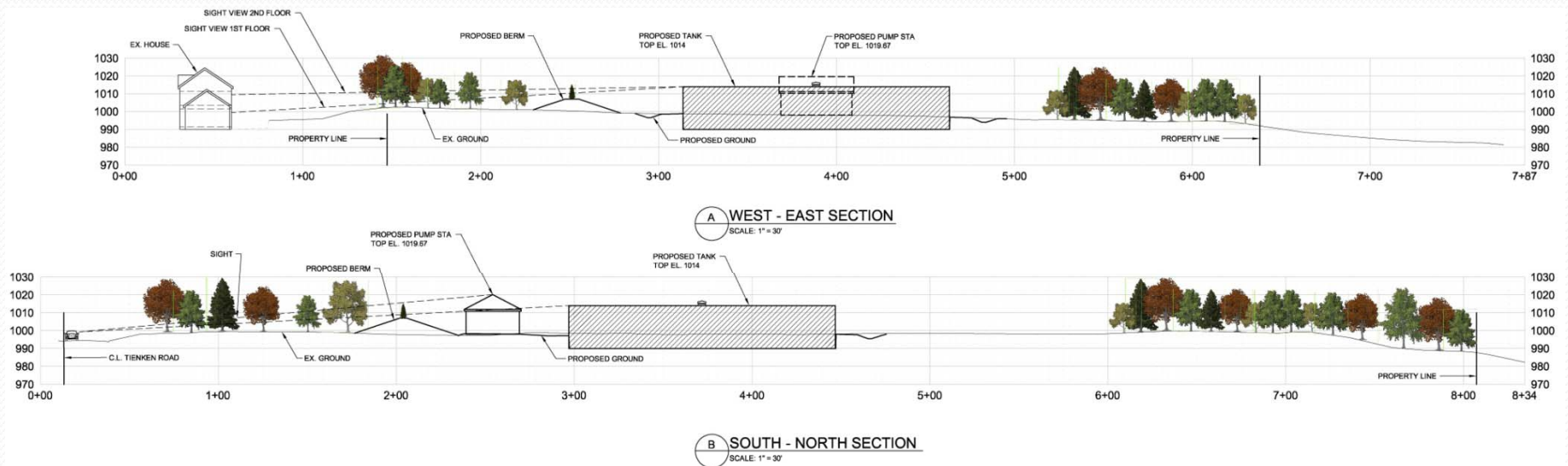
Proposed Site Plan, Tienken/Adams

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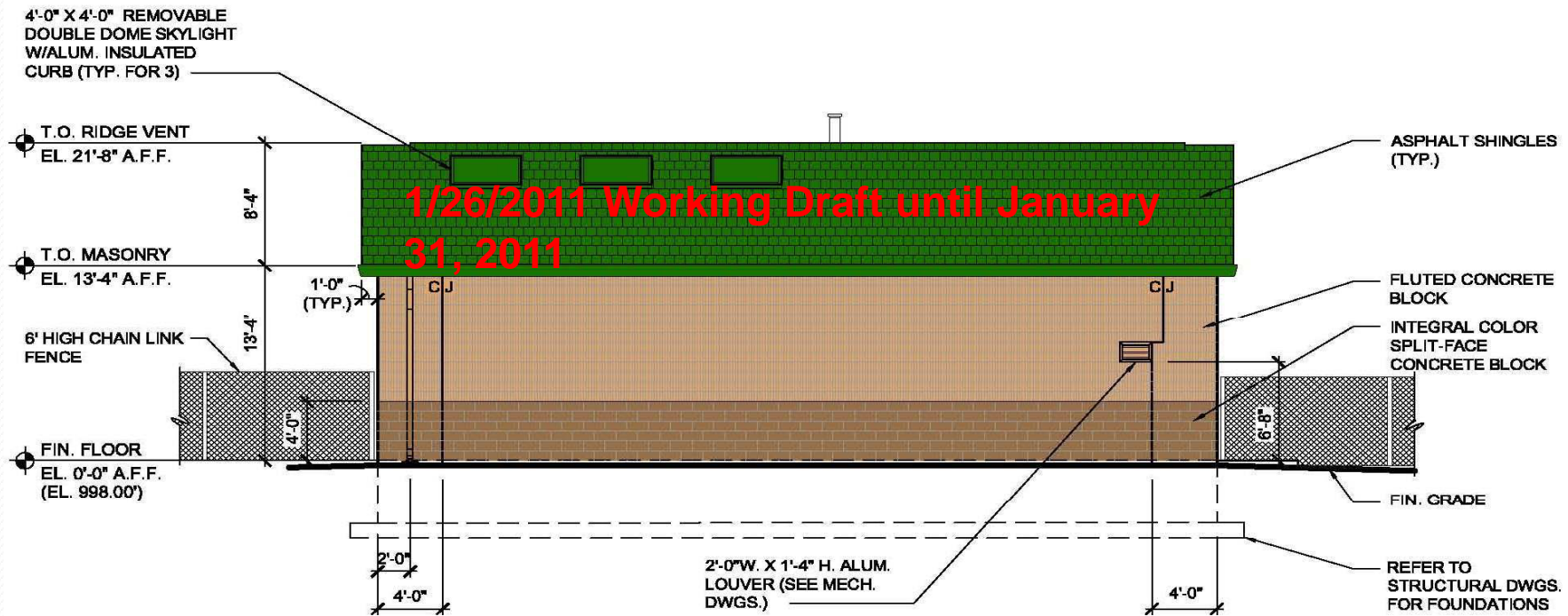
Proposed Site Plan, Tienken/Adams

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Proposed Site Plan, Tienken/Adams

Booster Station



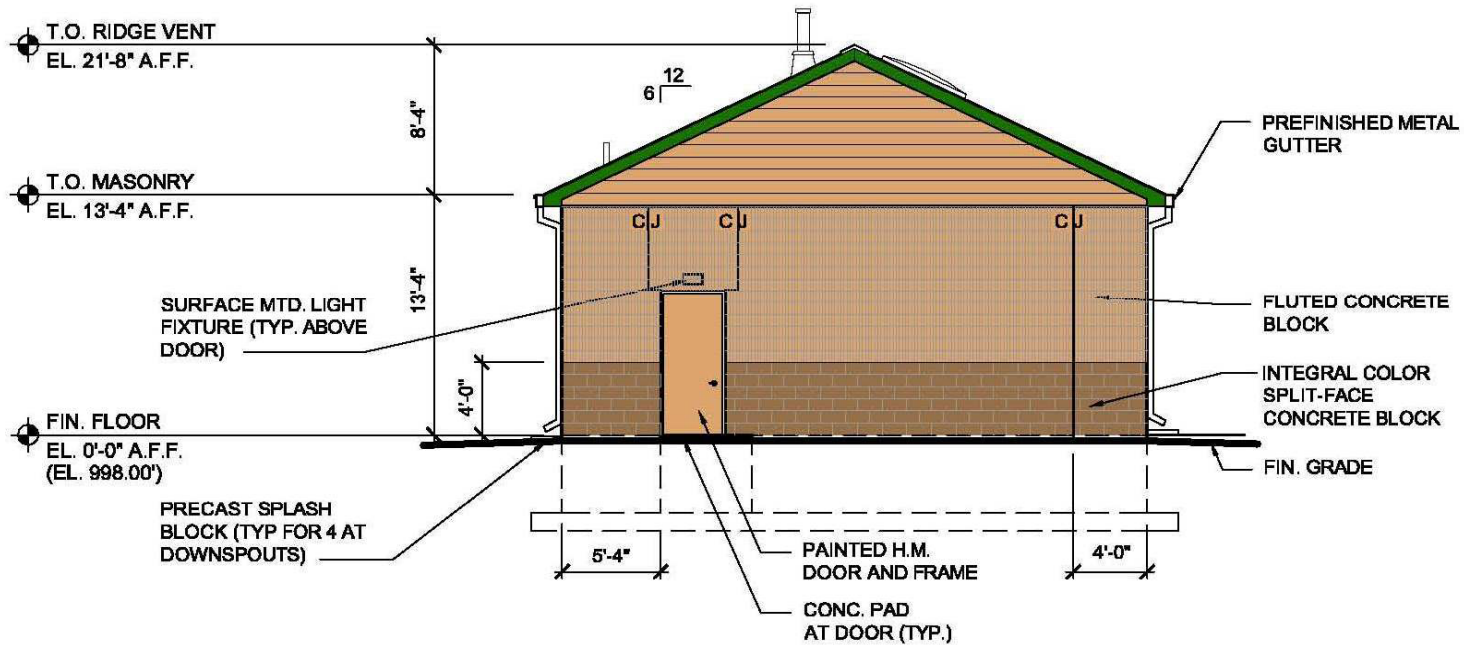
PUMP STATION SOUTH - ELEVATION

SCALE: 1" = 10'

Proposed Site Plan, Tienken/Adams

Booster Station

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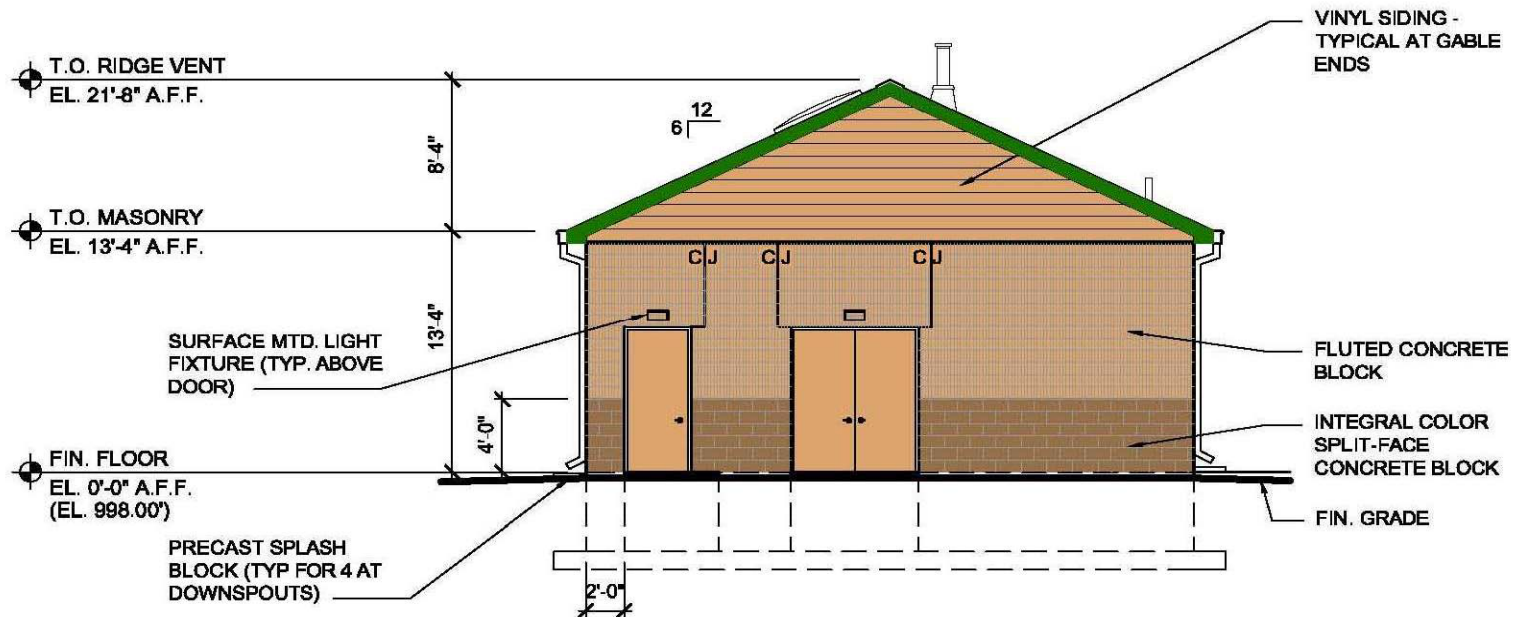


PUMP STATION WEST - ELEVATION

SCALE: 1" = 10'

Proposed Site Plan, Tienken/Adams

Booster Station **1/26/2011 Working Draft until January 31, 2011**

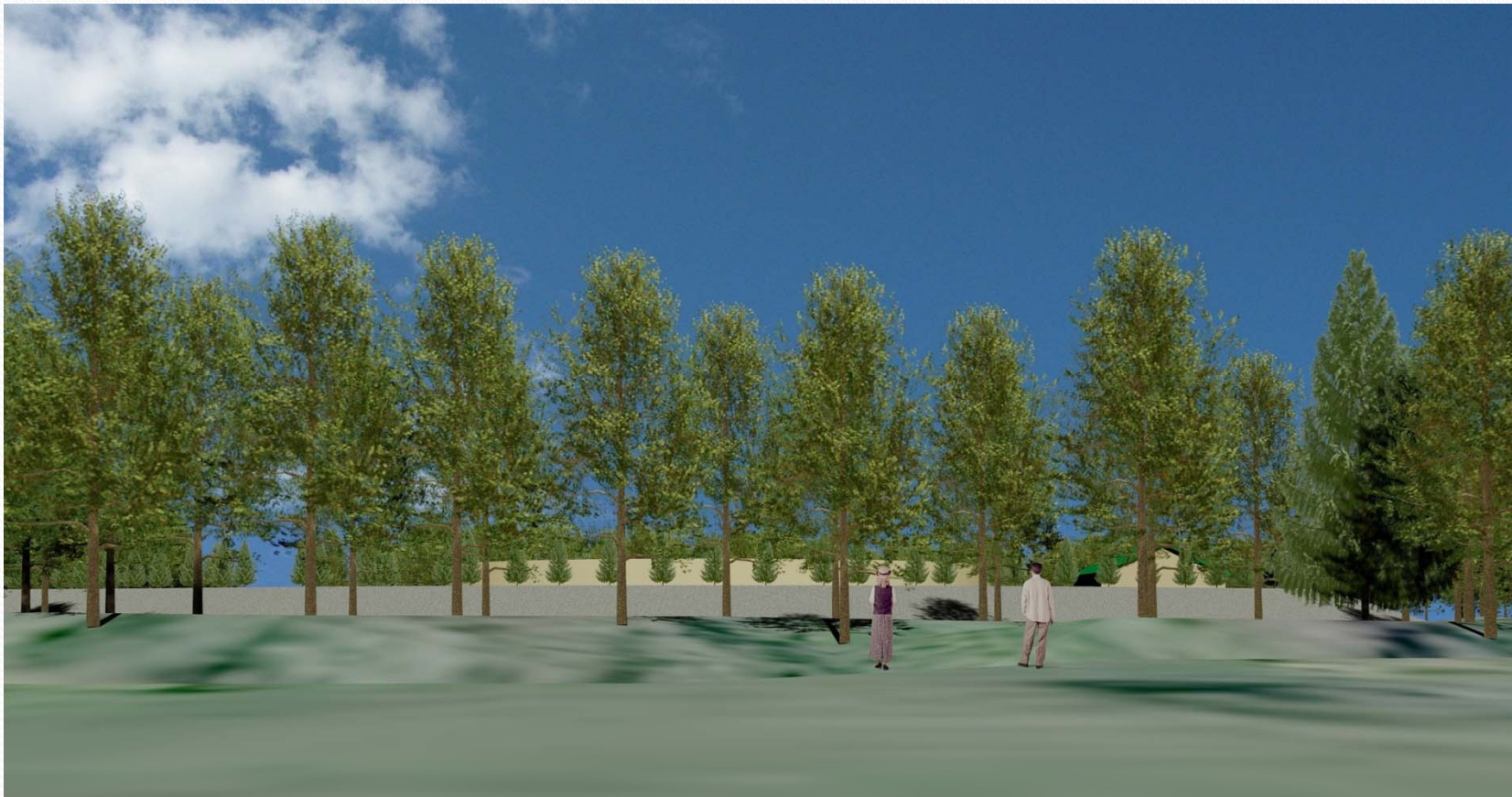


PUMP STATION EAST - ELEVATION

SCALE: 1" = 10'

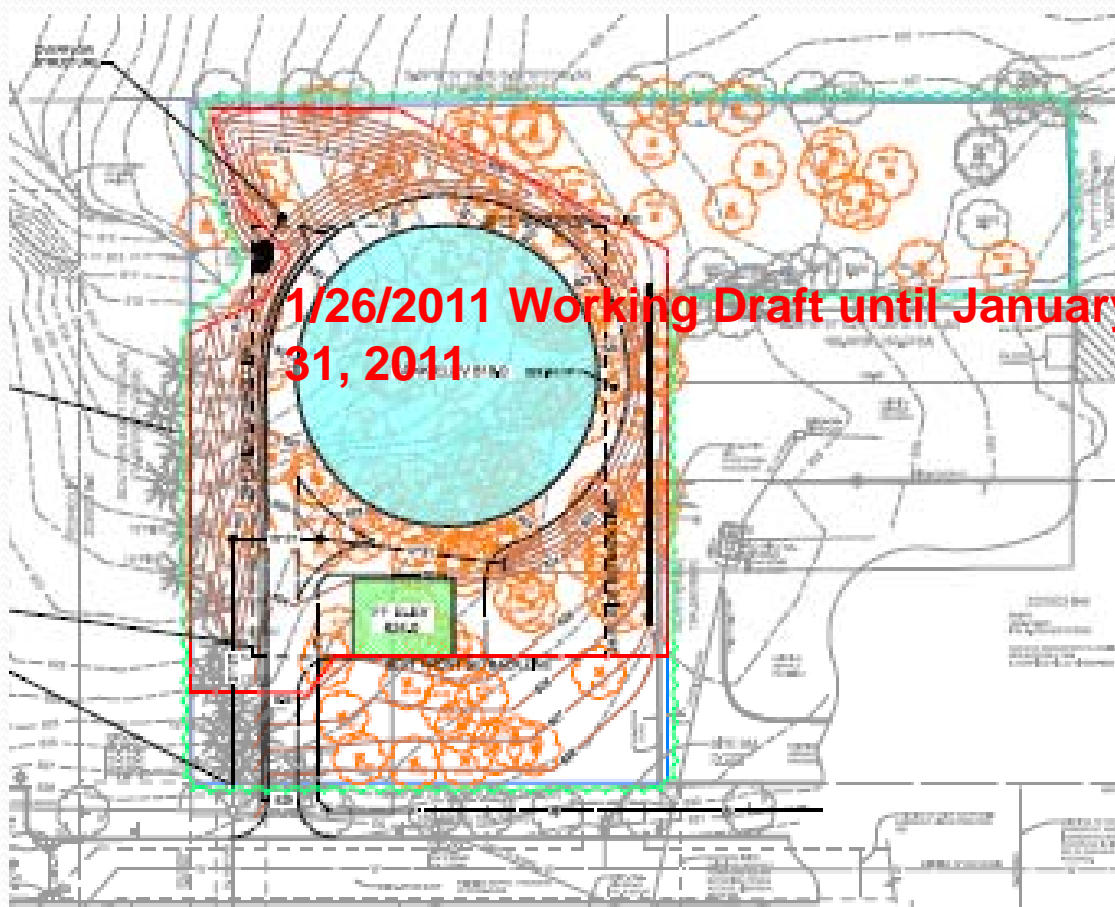
Proposed Tienken/Adams Site

Looking East – from back of homes along the east side of Royal Doulton Blvd



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Proposed Site Plan, Rochester /Avon



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Concerns

- Lighting
- Noise from booster station
- Tank Failure / Flood Insurance
- Decrease in property Values
- Homeland Security / US Army Corps of Engineers Requirements
- Close proximity to schools and neighborhoods

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Video

- Proposed reservoir location on the Tienken/Adams site has not been finalized

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Water Storage, Estimating the Effect

- Fiscal Evaluation, Keith Sawdon, Director

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Construction Information

- Construction Costs
- Annual Operations & Maintenance Costs – approximately \$50,000 / annually
- Construction Schedule

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Proposed Construction Schedule

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Site plan submittal to Planning Commission	February 2011
Site plan	February - April 2011
Bid Documents - Reservoir & Booster Station	February - May 2011
Permitting	April - June 2011
Bid Documents - Water Main	February - April 2011
Advertise for Bids	May 2011
Bid Opening	June 2011
Construction - Water Main	June - December 2011
Construction - Reservoir & Booster Station	June 2011 - March 2012
Water Reservoir System Start-up	April 2012



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“Nobody can really guarantee the future. The best we can do is size up the chances, calculate the risks involved, estimate our ability to deal with them and make our plans with confidence.”

Henry Ford II



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Questions